Claims

What is claimed is:

1. An expandable reaming tool comprising:
   at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
   at least one spiral blade formed on at least one reamer pad; and
   a plurality of cutting elements disposed on the at least one spiral blade.

2. The expandable reaming tool of claim 1, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

3. The expandable reaming tool of claim 1, further comprising at least one gage protection element disposed on a gage surface of the at least one spiral blade.

4. The expandable reaming tool of claim 3, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

5. The expandable reaming tool of claim 1, further comprising a vibration damping insert disposed on the at least one spiral blade.

6. The expandable reaming tool of claim 1, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

7. The expandable reaming tool of claim 1, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

8. The expandable reaming tool of claim 1, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

9. The expandable reaming tool of claim 1, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

10. The expandable reaming tool of claim 1, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

11. The expandable reaming tool of claim 1, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

12. The expandable reaming tool of claim 1, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

13. The expandable reaming tool of claim 1, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

14. The expandable reaming tool of claim 1, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

15. The expandable reaming tool of claim 1, wherein the at least two reamer pads and the at least one spiral blade are formed from a non-magnetic material.

16. The expandable reaming tool of claim 1, wherein the at least two reamer pads and the at least one spiral blade are formed from a matrix material infiltrated with a binder alloy.

17. The expandable reaming tool of claim 1, wherein surfaces of the at least one spiral blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

18. The expandable reaming tool of claim 1, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one spiral blade is equal to at least twice a diameter of the gage cutting element.

19. The expandable reaming tool of claim 1, wherein a gage surface of the at least one spiral blade comprises a hardfacing material.

20. The expandable reaming tool of claim 1, wherein a gage surface of the at least one spiral blade is formed from a diamond impregnated material.

21. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads; and
a plurality of cutting elements disposed on the at least one blade,
wherein the plurality of cutting elements are arranged so as to enable the expandable reaming tool to backream a formation in a wellbore.

22. The expandable reaming tool of claim 21, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

23. The expandable reaming tool of claim 21, further comprising at least one gage protection element disposed on a gage surface of the at least one spiral blade.

24. The expandable reaming tool of claim 21, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

25. The expandable reaming tool of claim 20, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

26. The expandable reaming tool of claim 21, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

27. The expandable reaming tool of claim 21, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

28. The expandable reaming tool of claim 21, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

29. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

30. The expandable reaming tool of claim 29, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

31. The expandable reaming tool of claim 29, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

32. The expandable reaming tool of claim 31, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

33. The expandable reaming tool of claim 29, further comprising a vibration damping insert disposed on the at least one blade.

34. The expandable reaming tool of claim 29, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

35. The expandable reaming tool of claim 29, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

36. The expandable reaming tool of claim 29, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

37. The expandable reaming tool of claim 29, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

38. The expandable reaming tool of claim 29, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

39. The expandable reaming tool of claim 29, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

40. The expandable reaming tool of claim 29, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

41. The expandable reaming tool of claim 29, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

42. The expandable reaming tool of claim 29, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

43. The expandable reaming tool of claim 29, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

44. The expandable reaming tool of claim 29, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

45. The expandable reaming tool of claim 29, wherein a gage surface of the at least one blade comprises a hardfacing material.

46. The expandable reaming tool of claim 29, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

47. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

48. The expandable reaming tool of claim 47, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

49. The expandable reaming tool of claim 47, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

50. The expandable reaming tool of claim 49, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

51. The expandable reaming tool of claim 47, further comprising a vibration damping insert disposed on the at least one blade.

52. The expandable reaming tool of claim 47, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

53. The expandable reaming tool of claim 47, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

54. The expandable reaming tool of claim 47, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

55. The expandable reaming tool of claim 47, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

56. The expandable reaming tool of claim 47, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

57. The expandable reaming tool of claim 47, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

58. The expandable reaming tool of claim 47, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

59. The expandable reaming tool of claim 47, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

60. The expandable reaming tool of claim 47, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

61. The expandable reaming tool of claim 47, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

62. The expandable reaming tool of claim 47, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of

a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

63. The expandable reaming tool of claim 47, wherein a gage surface of the at least one blade comprises a hardfacing material.

64. The expandable reaming tool of claim 47, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

65. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein the plurality of cutting elements are arranged so as to substantially balance work performed between the at least two reamer pads.

66. The expandable reaming tool of claim 65, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

67. The expandable reaming tool of claim 65, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

68. The expandable reaming tool of claim 65, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

69. The expandable reaming tool of claim 65, further comprising a vibration damping insert disposed on the at least one blade.

70. The expandable reaming tool of claim 65, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

71. The expandable reaming tool of claim 65, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

72. The expandable reaming tool of claim 65, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

73. The expandable reaming tool of claim 65, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

74. The expandable reaming tool of claim 65, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

75. The expandable reaming tool of claim 65, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

76. The expandable reaming tool of claim 65, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

77. The expandable reaming tool of claim 65, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

78. The expandable reaming tool of claim 65, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

79. The expandable reaming tool of claim 65, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

80. The expandable reaming tool of claim 65, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

81. The expandable reaming tool of claim 65, wherein a gage surface of the at least one blade comprises a hardfacing material.

82. The expandable reaming tool of claim 65, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

83. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein the at least two reamer pads are adapted to substantially mass balance the reaming tool about an axis of rotation thereof.

84. The expandable reaming tool of claim 83, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

85. The expandable reaming tool of claim 83, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

86. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein the plurality of cutting elements are positioned to each have a backrake angle of greater than 20 degrees.

87. The expandable reaming tool of claim 86, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

88. The expandable reaming tool of claim 86, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

89. The expandable reaming tool of claim 86, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

90. The expandable reaming tool of claim 86, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

91. The expandable reaming tool of claim 86, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between corresponding cutting elements on each of the at least two reamer pads.

92. The expandable reaming tool of claim 86, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

93. The expandable reaming tool of claim 86, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

94. The expandable reaming tool of claim 86, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

95. The expandable reaming tool of claim 86, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

96. The expandable reaming tool of claim 86, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

97. The expandable reaming tool of claim 86, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

98. The expandable reaming tool of claim 86, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

99. The expandable reaming tool of claim 86, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

100. The expandable reaming tool of claim 86, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

101. The expandable reaming tool of claim 86, wherein a gage surface of the at least one blade comprises a hardfacing material.

102. The expandable reaming tool of claim 86, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

103. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein each of the plurality of cutting elements has a diameter of less than 13 mm or greater than 13 mm.

104. The expandable reaming tool of claim 103, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

105. The expandable reaming tool of claim 103, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

106. The expandable reaming tool of claim 105, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

107. The expandable reaming tool of claim 103, further comprising a vibration damping insert disposed on the at least one blade.

108. The expandable reaming tool of claim 103, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

109. The expandable reaming tool of claim 103, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

110. The expandable reaming tool of claim 103, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

111. The expandable reaming tool of claim 103, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

112. The expandable reaming tool of claim 103, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

113. The expandable reaming tool of claim 103, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

114. The expandable reaming tool of claim 103, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

115. The expandable reaming tool of claim 103, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

116. The expandable reaming tool of claim 103, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

117. The expandable reaming tool of claim 103, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

118. The expandable reaming tool of claim 103, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

119. The expandable reaming tool of claim 103, wherein a gage surface of the at least one blade comprises a hardfacing material.

120. The expandable reaming tool of claim 103, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

121. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on selected surfaces of the blades,

wherein the selected surfaces are shaped so that a cutting element exposure is equal to at least a half of a diameter of the cutting element.

122. The expandable reaming tool of claim 121, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

123. The expandable reaming tool of claim 121, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

124. The expandable reaming tool of claim 121, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

125. The expandable reaming tool of claim 121, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

126. The expandable reaming tool of claim 121, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

127. The expandable reaming tool of claim 121, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

128. The expandable reaming tool of claim 121, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

129. The expandable reaming tool of claim 121, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

130. The expandable reaming tool of claim 121, wherein a gage surface of the at least one blade comprises a hardfacing material.

131. The expandable reaming tool of claim 121, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

132. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

133. The expandable reaming tool of claim 132, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

134. The expandable reaming tool of claim 132, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

135. The expandable reaming tool of claim 134, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

136. The expandable reaming tool of claim 132, further comprising a vibration damping insert disposed on the at least one blade.

137. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

138. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

139. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

140. The expandable reaming tool of claim 132, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

141. The expandable reaming tool of claim 132, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

142. The expandable reaming tool of claim 132, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

143. The expandable reaming tool of claim 132, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

144. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

145. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

146. The expandable reaming tool of claim 132, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

147. The expandable reaming tool of claim 132, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

148. The expandable reaming tool of claim 132, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

149. The expandable reaming tool of claim 132, wherein a gage surface of the at least one blade comprises a hardfacing material.

150. The expandable reaming tool of claim 132, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

151. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

152. The expandable reaming tool of claim 151, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

153. The expandable reaming tool of claim 151, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

154. The expandable reaming tool of claim 151, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

155. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

156. The expandable reaming tool of claim 155, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

157. The expandable reaming tool of claim 155, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

158. The expandable reaming tool of claim 155, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

159. The expandable reaming tool of claim 155, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.

160. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one spiral blade formed on at least one of the at least two reamer pads;

a plurality of cutting elements disposed on the spiral blades,

wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one spiral blade is equal to at least twice a diameter of the gage cutting element.

161. The expandable reaming tool of claim 160, further comprising at least one gage protection element disposed on a gage surface of the at least one spiral blade.

162. The expandable reaming tool of claim 160, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

163. The expandable reaming tool of claim 160, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

164. The expandable reaming tool of claim 160, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

165. The expandable reaming tool of claim 160, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

166. The expandable reaming tool of claim 160, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

167. The expandable reaming tool of claim 160, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

168. The expandable reaming tool of claim 160, wherein the at least two reamer pads and the at least one spiral blade are formed from a non-magnetic material.

169. The expandable reaming tool of claim 160, wherein the at least two reamer pads and the at least one spiral blade are formed from a matrix material infiltrated with a binder alloy.

170. The expandable reaming tool of claim 160, wherein a gage surface of the at least one spiral blade is formed from a diamond impregnated material.

171. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein the at least one blade comprises a hardfacing material thereon.

172. The expandable reaming tool of claim 171, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

173. The expandable reaming tool of claim 171, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

174. An expandable reaming tool, comprising:
at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;
at least one blade formed on each of the at least two reamer pads;
a plurality of cutting elements disposed on the blades,
wherein the at least one blade comprises a diamond impregnated material.

175. The expandable reaming tool of claim 174, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

176. The expandable reaming tool of claim 175, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

177. The expandable reaming tool of claim 174, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

178. The expandable reaming tool of claim 174, wherein the plurality of cutting elements are arranged to form a tapered cutting structure.

179. The expandable reaming tool of claim 174, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

180. The expandable reaming tool of claim 174, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

181. The expandable reaming tool of claim 174, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

182. An expandable reaming tool, comprising:

at least two reamer pads operatively coupled to a tool body and adapted to be displaced between a retracted position and an expanded position;

at least one blade formed on each of the at least two reamer pads;

a plurality of cutting elements disposed on the blades,

wherein the plurality of cutting elements are arranged so as to form a tapered cutting structure.

183. The expandable reaming tool of claim 182, wherein the plurality of cutting elements comprise at least one of polycrystalline diamond inserts, tungsten carbide inserts, and boron nitride inserts.

184. The expandable reaming tool of claim 182, further comprising at least one gage protection element disposed on a gage surface of the at least one blade.

185. The expandable reaming tool of claim 184, wherein the at least one gage protection element comprises at least one of a thermally stabilized polycrystalline insert and a polycrystalline diamond insert.

186. The expandable reaming tool of claim 182, further comprising a vibration damping insert disposed on the at least one blade.

187. The expandable reaming tool of claim 182, wherein the plurality of cutting elements are arranged so as to substantially balance axial forces between the at least two reamer pads.

188. The expandable reaming tool of claim 182, wherein the plurality of cutting elements are arranged so that a net lateral force acting on the at least two reamer pads is substantially zero.

189. The expandable reaming tool of claim 182, wherein the at least two reamer pads and the plurality of cutting elements are adapted to backream a formation in a wellbore.

190. The expandable reaming tool of claim 182, wherein the plurality of cutting elements have backrake angles of greater than 20 degrees.

191. The expandable reaming tool of claim 182, wherein selected ones of the plurality of cutting elements have different backrake angles than other ones of the plurality of cutting elements.

192. The expandable reaming tool of claim 182, wherein each of the plurality of cutting elements has a diameter of less than 13.0 mm or greater than 13.0 mm.

193. The expandable reaming tool of claim 182, wherein selected ones of the plurality of cutting elements disposed on one of the at least two reamer pads are positioned so as to form a redundant cutting arrangement with other selected ones of the plurality of cutting elements disposed on a different one of the at least two reamer pads.

194. The expandable reaming tool of claim 182, wherein the at least two reamer pads and the plurality of cutting elements are adapted to substantially mass balance the expandable reaming tool about an axis of rotation of the reaming tool.

195. The expandable reaming tool of claim 182, wherein the at least two reamer pads and the at least one blade are formed from a non-magnetic material.

196. The expandable reaming tool of claim 182, wherein the at least two reamer pads and the at least one blade are formed from a matrix material infiltrated with a binder alloy.

197. The expandable reaming tool of claim 182, wherein surfaces of the at least one blade proximate the plurality of cutting elements are shaped so that a cutting element exposure is equal to at least half of a diameter of the cutting element.

198. The expandable reaming tool of claim 182, wherein a perpendicular distance measured from a surface of the at least two reamer pads to an outermost extent of a gage cutting element disposed on the at least one blade is equal to at least twice a diameter of the gage cutting element.

199. The expandable reaming tool of claim 182, wherein a gage surface of the at least one blade comprises a hardfacing material.

200. The expandable reaming tool of claim 182, wherein a gage surface of the at least one blade is formed from a diamond impregnated material.